

**§ 172.130 Calculations.**

(a) Except as provided in §153.7 of this chapter, each tankship must be shown by design calculations to meet the survival conditions in §172.150 in each condition of loading and operation assuming the damage specified in §172.133 for the hull type prescribed in part 153 of this chapter.

(b) If a cargo listed in Table I of part 153 of this chapter is to be carried, the vessel must be at least the hull type specified in part 153 of this chapter for that cargo.

[CGD 79-023, 48 FR 51040, Nov. 4, 1983, as amended by CGD 81-101, 52 FR 7799, Mar. 12, 1987]

**§ 172.133 Character of damage.**

(a) If a type I hull is required, design calculations must show that the vessel can survive damage at any location.

(b) Except as provided in §153.7 of this chapter, if a type II hull is required, design calculations must show that a vessel—

(1) Longer than 492 feet (150 meters) in length can survive damage at any location; and

(2) Except as specified in paragraph (d) of this section, 492 feet (150 meters) or less in length can survive damage at any location.

(c) If a Type III hull is required, design calculations must show that a vessel—

(1) Except as specified in paragraph (d) of this section, 410 feet (125 meters) in length or longer can survive damage at any location; and

(2) Less than 410 feet (125 meters) in length can survive damage at any location except to an aft machinery space.

(d) A vessel described in paragraph (b)(2) or (c)(1) of this section need not be designed to survive damage to a main transverse watertight bulkhead bounding an aft machinery space. Except as provided in §153.7 of this chapter, the machinery space must be calculated as a single floodable compartment.

[CGD 79-023, 48 FR 51040, Nov. 4, 1983, as amended by CGD 81-101, 52 FR 7799, Mar. 12, 1987]

**§ 172.135 Extent of damage.**

For the purpose of §172.133—

(a) Design calculations must include both side and bottom damage, applied separately; and

(b) Damage must consist of the penetrations having the dimensions given in Table 172.135 except that, if the most disabling penetrations would be less than the penetrations given in Table 172.135, the smaller penetration must be assumed.

**TABLE 172.135—EXTENT OF DAMAGE**

COLLISION PENETRATION	
Longitudinal extent .....	0.495L <sup>2</sup> / <sub>3</sub> or 47.6 feet (( <sup>1</sup> / <sub>3</sub> )L <sup>2</sup> / <sub>3</sub> or 14.5m) whichever is shorter.
Transverse extent <sup>1</sup> .....	B/5 or 37.74 feet (11.5m) <sup>2</sup> whichever is shorter.
Vertical extent .....	From the baseline upward without limit.
GROUNDING PENETRATION AT THE FORWARD END BUT EXCLUDING ANY DAMAGE AFT OF A POINT 0.3L AFT OF THE FORWARD PERPENDICULAR	
Longitudinal extent .....	L/10.
Transverse extent .....	B/6 or 32.81 feet (10m) whichever is shorter.
Vertical extent from the baseline upward.	B/15 or 19.7 feet (6m) whichever is shorter.
GROUNDING PENETRATION AT ANY OTHER LONGITUDINAL POSITION	
Longitudinal extent .....	L/10 or 16.41 feet (5m) whichever is shorter.
Transverse extent .....	16.41 feet (5m).
Vertical extent from the baseline upward.	B/15 or 19.7 feet (6m) whichever is shorter.

<sup>1</sup> Damage applied inboard from the vessel's side at right angles to the centerline at the level of the summer load line assigned under Subchapter E of this chapter.

<sup>2</sup> B is measured amidships.

**§ 172.140 Permeability of spaces.**

(a) When doing the calculations required in §172.130, the permeability of a floodable space other than a machinery space must be as listed in Table 172.060(b).

(b) Calculations in which a machinery space is treated as a floodable space must be based on an assumed machinery space permeability of 0.85, unless the use of an assumed permeability of less than 0.85 is justified in detail.

(c) If a cargo tank would be penetrated under the assumed damage, the cargo tank must be assumed to lose all cargo and refill with salt water up to the level of the tankship's final equilibrium waterline.

**§ 172.150 Survival conditions.**

A tankship is presumed to survive assumed damage if it meets the following conditions in the final stage of flooding: